

THE
BOTANICAL RECORD BOOK

CONTAINING

DIRECTIONS FOR LABORATORY WORK

IN BOTANY, LIST OF BOTANICAL TERMS, SPACES FOR
DRAWINGS AND OBSERVATIONS, PREPARED
BLANKS FOR RECORDING THE
ANALYSES OF PLANTS,
ETC.

PREPARED FOR THE USE OF SCHOOLS

BY

JOSIAH KEEP, A. M.,

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MILLS COLLEGE.

Published by the Author, Mills College, Alameda County, California.

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1890.

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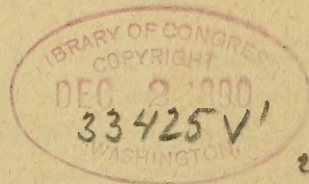
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INTRODUCTION.

Whatever can aid either teacher or pupil in the study of Botany is worthy of attention. Especially is this true when the promised aid lies in the direction of making simple a series of actual experiments and observations upon plants and vegetable productions. There is very much to learn in the short time usually allotted to the study of this science,—the structure and morphology of the different parts and organs of the plant, the meaning of many new terms, the methods of analysis and classification, and the main features of the chief botanical orders or families. Moreover, the study of books and charts is not sufficient; but the pupil should see and handle the objects of which the lesson treats, and, if possible, should gather living specimens on the hills and in the meadows. The characteristics of the plant having been studied, a specimen should be carefully pressed, and at length should find a permanent resting place in that botanical casket, the student's herbarium. All of this work takes time; hence the course should be laid out orderly and with care.

The following pages have been prepared with a view to attaining the most complete results consistent with the amount of time which the student can ordinarily devote to this study. If a record page is crowded with spaces requiring detailed entries, the pupil is apt to be discouraged by the formidable task, and to slight or wholly omit certain portions; besides, the writing must be cramped on account of insufficient space. In the following blanks enough space has been provided so that the penmanship may be clear; and, while the essential features of description are retained, the list is not made so exhaustive as to appear discouraging.

It is believed by the author, after a considerable experience in teaching this science, that for most of our pupils such a course is to be preferred to one which demands numerous and obscure details.

In the preparation of the topics and blanks for laboratory work, the same rule has been kept in mind; the attention has been directed to the most important features, and convenient spaces have been prepared for the records.

SUGGESTIONS CONCERNING LABORATORY WORK.

The work indicated on the following pages is of great value in the study of Botany, and none of the ten subjects should be omitted. If the available time is too limited for them all, a less number of specimens than is recommended for each subject may be examined; on the other hand, additional work can be devised by the teacher who has an abundance of time at his command.

The various subjects should be taken up soon after they have been studied in the text-book, while the interest of the pupil is keen. The collection of flowers for the

herbarium should be begun as early in the season as good specimens can be obtained; and observations upon the same should be recorded so far as the pupils understand the terms. Any blank spaces can usually be filled later in the season. It is hardly necessary to say that nothing should be recorded which has not been actually seen by the pupil who is making the record. It is desirable that the teacher should give some simple instruction in drawing. Outline drawings at least can be made by all, while the shading may be added by those who are able to do so. Every pupil should make the drawings, endeavoring to express what has been really seen. While all should try to draw well, the teacher will make allowance for differences in artistic taste and skill. If this plan is faithfully carried out, the Record Book may become an object of much interest, and perhaps of beauty also.

In the study of solid objects, like seeds, buds, etc., three drawings should be made:—the first, of the object as a whole; the second, of a longitudinal section along the axis; while the third should represent a transverse section through the center. In the case of a bud, *e. g.*, the first will represent it on the twig, the second will clearly show the relation of the scales and immature leaves to the axis, and the third will present their relation to one another. Good earnest work in this part of the study of Botany will amply repay the patient student; and the teacher who leads the pupil on in the investigation of these interesting phases of the Creator's handiwork will not fail of a reward.

The tools needed by each pupil are a lens, or simple microscope, a sharp knife, a few needles set in handles, and a small metric rule for taking measurements. In the schoolroom there should be a compound microscope, a hone for sharpening knives and needles, and a few boxes for holding material and apparatus. Of the many presses used for preparing plants for the herbarium, the author has found none of such general use as the lattice-work press made by Jas. W. Queen & Co., of Philadelphia.

SCHEDULE OF EXERCISES.

In each case, the student will follow the outline for the subject as given on the following pages.

1. Plant several kinds of seeds, and record observations.
2. Study six seeds according to the directions given.
3. Examine four buds; make three drawings of each.
4. Study a root, a bulb and a tuber.
5. Study ten leaves; make one drawing of each.
6. Observe four fruits, making proper records and drawings.
7. Make and study transverse sections of the stem of an exogen and of an endogen.
8. Examine with the compound microscope the pollen of several flowers; make drawings, and record shape, color, etc.
9. Record in this book the required observations on forty different species of plants.
10. Make an herbarium of at least fifty specimens of dried and mounted plants.

Put on each a number corresponding with its page in the Record Book.

OUTLINES FOR LABORATORY WORK.

I. PLANT RAISING.

At the beginning of the term let each pupil plant a few seeds, either in a garden or in a flower pot, and then watch the growth of the seedlings, draw the plantlets, and record observations. The seeds of flax and of the Morning Glory are recommended, also beans, peas, and squash seeds.

NOTE.—On the blank pages which follow, the column for drawings is always numbered (1), while the lines are numbered from 2 to 10. This is done for uniformity, and does not mean that the drawings should always be made first. The record for each topic, however, should be placed on the line whose number corresponds with that of the topic. In this way explanatory writing will be avoided, as each answer can be referred to its proper question or topic. The record or answer should usually be brief and concise, and should express in a few words the main points of the object under consideration.

TOPICS.

- | | |
|----------------------------------|-------------------------------|
| 1. Drawings of plantlets. | 5. Their manner of growth. |
| 2. Date of planting. | 6. Details of culture. |
| 3. Name and number of seeds. | 7. Date of flowering. |
| 4. Dates when plantlets came up. | 8-10. Results, for each kind. |

II. SEEDS.

Use large, well-formed seeds ; prepare by soaking in water for twelve hours or more. Select such a variety of seeds as will best exhibit the chief forms of embryo and albumen. The following are recommended and in the order mentioned : Squash seeds, beans, peas, buckeyes or horse chestnuts, Morning Glory seeds, corn, and pine nuts.

TOPICS.

- | | |
|-------------------------------|----------------|
| 1. Drawings. | 6. Coats. |
| 2. Name of seed. | 7. Cotyledons. |
| 3. Size (in millimeters). | 8. Caulicle. |
| 4. Surface. | 9. Plumule. |
| 5. Hilum, shape and position. | 10. Albumen. |

III. BUDS.

Select a few large, well-formed buds, like those of the buckeye, walnut, cherry, maple and willow. Make a drawing of the bud on the twig, also of a longitudinal and of a transverse section.

TOPICS.

- | | |
|-------------------------|----------------------------|
| 1. Drawings. | 6. Varnish, etc. |
| 2. Name. | 7. Scales. |
| 3. Size. | 8. Interior structure. |
| 4. Arrangement on twig. | 9. Leaf bud or flower bud? |
| 5. Color. | 10. Remarks. |

IV. ROOTS, TUBERS AND BULBS.

A carrot, a potato, and an onion will serve as typical specimens. The structure and peculiarities of each should be carefully noted. Make drawings of each as a whole, also of sections, both transverse and longitudinal.

TOPICS.

- | | |
|----------------------|------------------------|
| 1. Drawings. | 6. Texture. |
| 2. Name and kind. | 7. Internal structure. |
| 3. Size. | 8. Bud or buds. |
| 4. Color { External. | 9. Rootlets. |
| { Internal. | 10. Remarks. |
| 5. Surface. | |

V. LEAVES.

Select various kinds of leaves to illustrate the different forms. If the leaf is compound, describe one leaflet, and show the form of the whole by the drawings.

TOPICS.

- | | |
|-------------------------------|----------------------------|
| 1. Draw outline and venation. | 6. Margin. |
| 2. Name. | 7. Apex and base. |
| 3. Size. | 8. Venation. |
| 4. Surfaces. | 9. Petiole and stipules. |
| 5. Shape. | 10. Microscopic structure. |

VI. FRUITS.

Take such as may be obtained easily; for example, apples, cranberries, pods of the pea, radish, or mustard, mallow "cheeses," etc. Remember that "The ovary matures into the fruit."

TOPICS.

- | | |
|--------------------|---|
| 1. Drawings. | 6. Number of seeds. |
| 2. Name and class. | 7. Their position. |
| 3. Size. | 8. Stem. |
| 4. Color. | 9. What part of this fruit is of value? |
| 5. Pericarp. | 10. Remarks. |

VII. STEMS.

Sections of stems, both herbaceous and woody, can easily be made with a knife or saw, and are very interesting, especially when examined with a lens or a compound microscope.

TOPICS.

- | | |
|-------------------|------------------------|
| 1. Drawings. | 6. Pith. |
| 2. Name of plant. | 7. Wood, how arranged? |
| 3. Kind of stem. | 8. Bark. |
| 4. Size. | 9. Medullary rays. |
| 5. Age. | 10. Ducts. |

VIII. POLLEN.

The study of pollen will depend largely upon the microscope at command ; but many interesting facts may be learned by observation with a simple lens.

TOPICS.

- | | |
|----------------------|-------------------------------------|
| 1. Drawings. | 6. Are the flowers perfect? |
| 2. From what flower? | 7. Are all the pollen grains alike? |
| 3. Size. | 8. How distributed? |
| 4. Color. | 9. Adhesion to stigma. |
| 5. Abundance. | 10. Remarks. |

Subjects IX and X are provided for in the latter part of this book. They should be taken up as early in the term as circumstances permit; and their faithful study will bring much pleasure to both pupil and teacher.

TERMS MOST COMMONLY USED IN THE DESCRIPTION OF PLANTS.

STEM.

Class,—exogenous, endogenous.

Character,—herbaceous, suffrutescent, suffruticose, fruticose, arborescent, arboreous.

LEAF.

Insertion,—alternate, opposite, whorled.

Venation,—pinna-netted, palmi-netted, parallel-veined.

Form,—linear, lanceolate, falcate, oblong, elliptical, oval, ovate, orbicular, oblanceolate, spatulate, deltoid, cuneate, cordate, obcordate, reniform, sagittate, hastate, peltate, pinnately compound, palmately compound.

Margin,—Entire, serrate, dentate, crenate, wavy, incised, lobed, cleft, parted, divided.

Surface,—smooth, glabrous, pubescent, hirsute, hispid.

FLOWER.

Inflorescence,—solitary, raceme, corymb, umbel, spike, head, spadix, catkin, panicle, cyme, fascicle, glomerule, scorpioid.

Perfectedness,—perfect, monœcious, dicœcious.

Regularity,—regular, irregular.

Cohesion,—polypetalous, gamopetalous, apetalous.

Shape of corolla,—rosaceous, cruciform, papilionaceous, anomalous, rotate, campanulate, funnel-shaped, tubular, salver-shaped, labiate, ligulate.

Insertion of stamens,—hypogynous, perigynous, epigynous, epipetalous, gynandrous.

OVARY.

Cohesion of carpels,—distinct, compound.


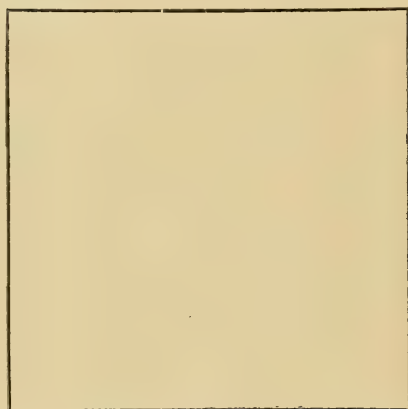
Shape of ovary,—long, short, globular, flattened, compressed, lenticular.

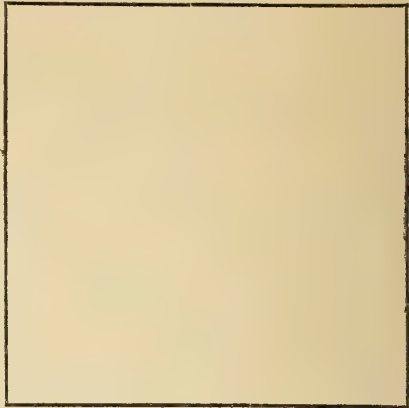
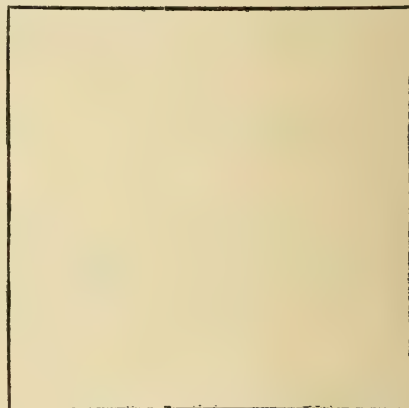
Placentation,—axile, parietal, free-central.

Fruit,—berry, drupe, pome, akene, nut, caryopsis, follicle, legume, capsule, silique, silicle, cone, aggregate, collective.

HABITAT. Fields, marsh, woods, etc.

LOCALITY. Town and State.

STEM.	No.	Date	
	Class	Character	
LEAF.	Insertion		
	Venation		
	Form		
	Margin		
	Upper surface		
	Lower surface		
LEAF.			
FLOWER.	Inflorescence	Perfectness	
	Regularity	Cohesion	
	No. of sepals	No. of petals	
	Shape of corolla	Color	
	Insertion of stamens	No. of stamens	
OVARY.	No. of carpels		
	Cohesion		
	Shape of ovary		
	No. of cells		No. of ovules
	Placentation		
	Fruit		
FLOWER.			
IDENTIFICATION.	Family or Order		
	Genus	Species	
	Common Name		
	Habitat	Locality	
	Remarks		

STEM.	No.	Date	
	Class	Character	
LEAF.	Insertion		
	Venation		
	Form		
	Margin		
	Upper surface		
	Lower surface	LEAF.	
FLOWER.	Inflorescence	Perfectness	
	Regularity	Cohesion	
	No. of sepals	No. of petals	
	Shape of corolla	Color	
	Insertion of stamens	No. of stamens	
OVARY.	No. of carpels		
	Cohesion		
	Shape of ovary		
	No. of cells		No. of ovules
	Placentation		
	Fruit	FLOWER.	
IDENTIFICATION.	Family or Order		
	Genus	Species	
	Common Name		
	Habitat	Locality	
	Remarks		

STEM.

No.

Date

Class Character

LEAF.

Insertion

Venation

Form

Margin

Upper surface

Lower surface



LEAF.

FLOWER.

Inflorescence

Perfectness

Regularity

Cohesion

No. of sepals

No. of petals

Shape of corolla

Color

Insertion of stamens

No. of stamens

OVARY.

No. of carpels

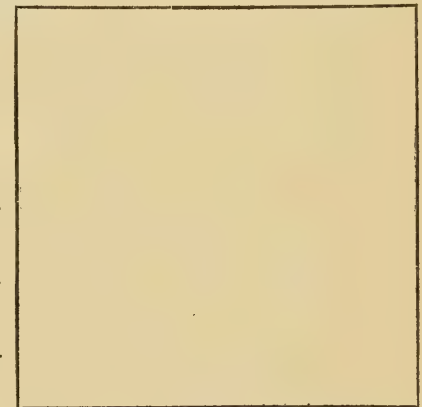
Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.

IDENTIFICATION.


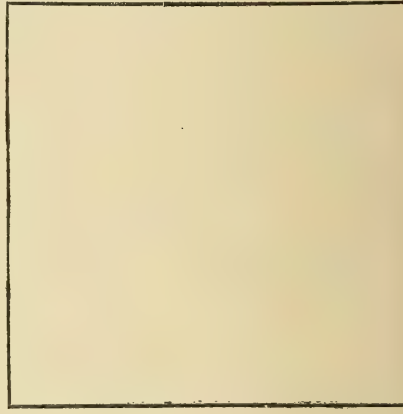
Family or Order


Genus Species

Common Name

Habitat Locality

Remarks

STEM.	No.	Date
	Class	Character
LEAF.	Insertion	
	Venation	
	Form	
	Margin	
	Upper surface	
	Lower surface	
		LEAF.
FLOWER.	Inflorescence	Perfectness
	Regularity	Cohesion
	No. of sepals	No. of petals
	Shape of corolla	Color
	Insertion of stamens	No. of stamens
	No. of carpels	
Cohesion		
Shape of ovary		
No. of cells	No. of ovules	
Placentation		
Fruit		
		FLOWER.
IDENTIFICATION.	Family or Order	
	Genus	Species
	Common Name	
	Habitat	Locality
	Remarks	

STEM.	{	No.	Date	
		Class	Character	
LEAF.	{	Insertion		
		Venation		
		Form		
		Margin		
		Upper surface		
		Lower surface		
LEAF.				
FLOWER.	{	Inflorescence	Perfectness	
		Regularity	Cohesion	
		No. of sepals	No. of petals	
		Shape of corolla	Color	
		Insertion of stamens	No. of stamens	
		OVARY.	{	No. of carpels
Cohesion				
Shape of ovary				
No. of cells	No. of ovules			
Placentation				
Fruit				
FLOWER.				
IDENTIFICATION.	{	Family or Order		
		Genus	Species	
		Common Name		
		Habitat	Locality	
		Remarks		

STEM. { No. Date

Class Character

LEAF. { Insertion

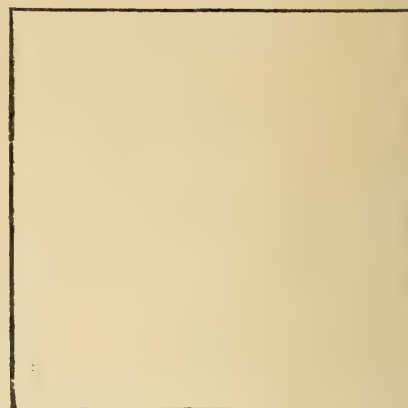
Venation

Form

Margin

Upper surface

Lower surface



LEAF

FLOWER. { Inflorescence Perfectness

Regularity Cohesion

No. of sepals No. of petals

Shape of corolla Color

Insertion of stamens No. of stamens

OVARY. { No. of carpels

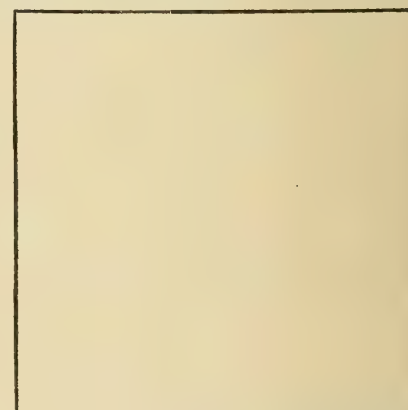
Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.

IDENTIFICATION. { Family or Order

Genus Species

Common Name

Habitat Locality

Remarks

STEM. { No. Date
Class Character

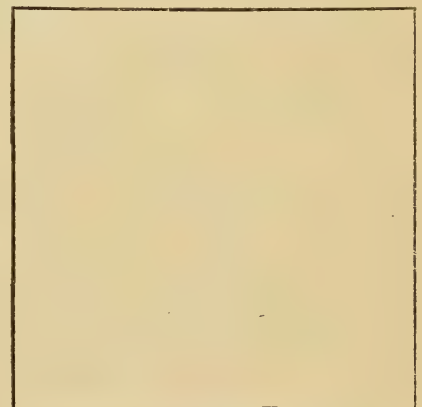
LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit



FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM. { No. Date
Class Character

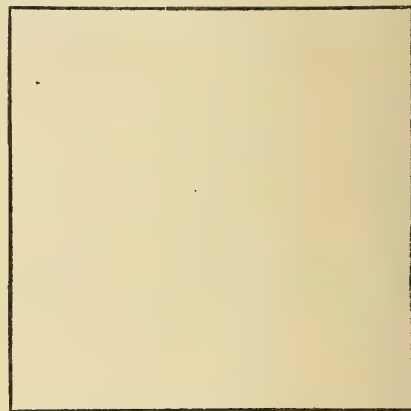
LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF

FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
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OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit

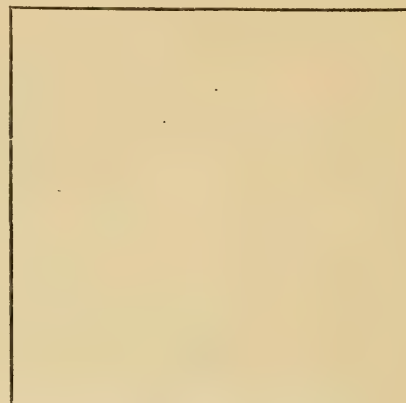


FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM. { No. Date
Class Character

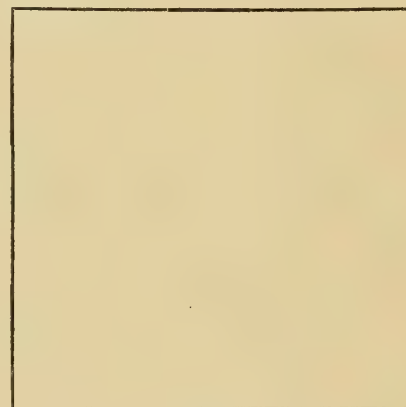
LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
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Fruit



FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM. { No. Date

Class Character

LEAF. { Insertion

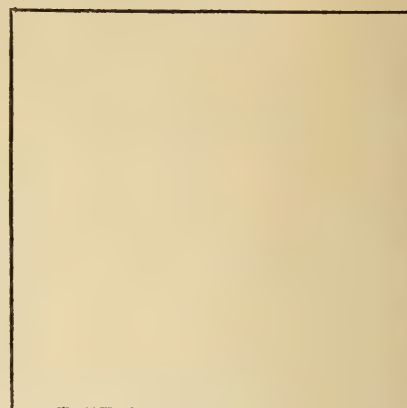
Venation

Form

Margin

Upper surface

Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness

Regularity Cohesion

No. of sepals No. of petals

Shape of corolla Color

Insertion of stamens No. of stamens

OVARY. { No. of carpels

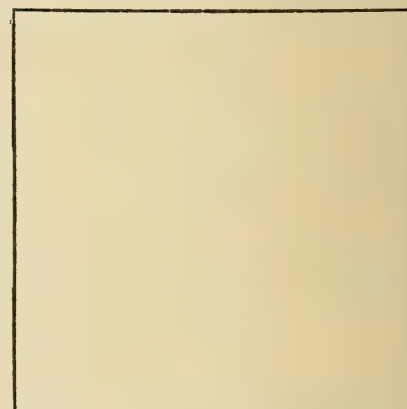
Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.

IDENTIFICATION. { Family or Order

Genus Species

Common Name

Habitat Locality

Remarks

STEM. { No. Date

Class Character

LEAF. { Insertion

Venation

Form

Margin

Upper surface

Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness

Regularity Cohesion

No. of sepals No. of petals

Shape of corolla Color

Insertion of stamens No. of stamens

OVARY. { No. of carpels

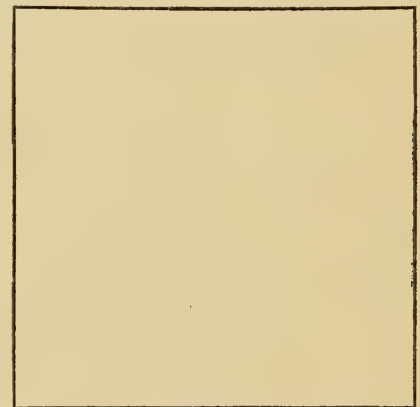
Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.

IDENTIFICATION. { Family or Order

Genus Species

Common Name

Habitat Locality

Remarks

STEM. { No. Date
Class Character

LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit



FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM. { No. Date

Class Character

LEAF. { Insertion

Venation

Form

Margin

Upper surface

Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness

Regularity Cohesion

No. of sepals No. of petals

Shape of corolla Color

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OVARY. { No. of carpels

Cohesion

Shape of ovary

No. of cells No. of ovules

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Fruit



FLOWER.


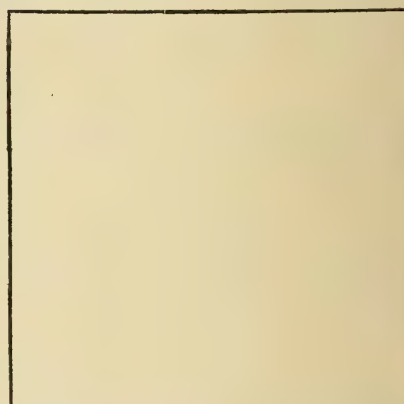
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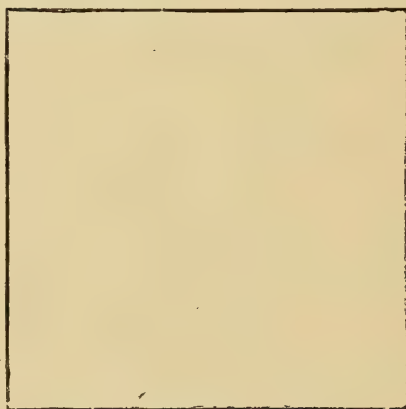
Genus Species


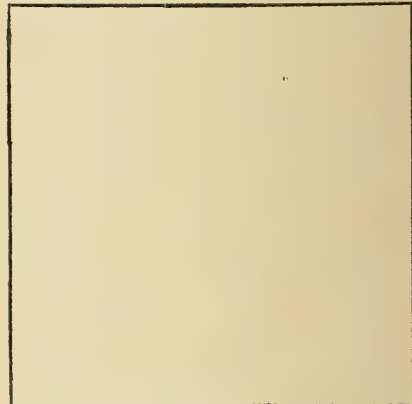
Common Name

Habitat Locality

Remarks

STEM.	No.	Date	
	Class	Character	
LEAF.	Insertion		
	Venation		
	Form		
	Margin		
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	Lower surface	LEAF.	
FLOWER.	Inflorescence	Perfectness	
	Regularity	Cohesion	
	No. of sepals	No. of petals	
	Shape of corolla	Color	
	Insertion of stamens	No. of stamens	
OVARY.	No. of carpels		
	Cohesion		
	Shape of ovary		
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	Placentation		
	Fruit		
IDENTIFICATION.	Family or Order		
	Genus	Species	
	Common Name		
	Habitat	Locality	
	Remarks		

STEM.	{	No.....	Date.....
		Class.....	Character.....
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		LEAF.	
FLOWER.	{	Inflorescence	Perfectness.....
		Regularity.....	Cohesion
		No. of sepals.....	No. of petals.....
		Shape of corolla	Color.....
		Insertion of stamens.....	No. of stamens.....
OVARY.	{	No. of carpels	
		Cohesion	
		Shape of ovary.....	
		No. of cells.....No. of ovules.....	
		Placentation.....	
		Fruit.....	
		FLOWER.	
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		Genus	Species
		Common Name	
		Habitat	Locality.....
		Remarks	

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	Upper surface		
	Lower surface		
		LEAF.	
FLOWER.	Inflorescence	Perfectness	
	Regularity	Cohesion	
	No. of sepals	No. of petals	
	Shape of corolla	Color	
	Insertion of stamens	No. of stamens	
OVARY.	No. of carpels		
	Cohesion		
	Shape of ovary		
	No. of cells		No. of ovules
	Placentation		
	Fruit		
		FLOWER.	
IDENTIFICATION.	Family or Order		
	Genus	Species	
	Common Name		
	Habitat	Locality	
	Remarks		

STEM. { No. Date

Class Character

LEAF. { Insertion

Venation

Form

Margin

Upper surface

Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness

Regularity Cohesion

No. of sepals No. of petals

Shape of corolla Color

Insertion of stamens No. of stamens

OVARY. { No. of carpels

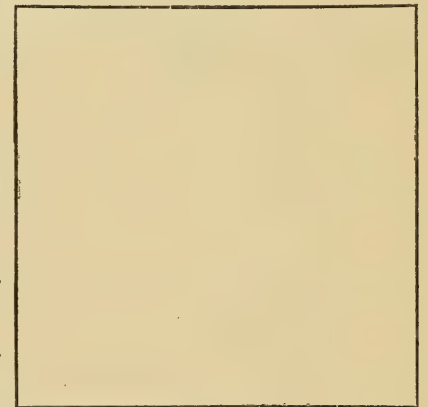
Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.

IDENTIFICATION. { Family or Order

Genus Species

Common Name

Habitat Locality

Remarks

STEM.

No. Date

Class Character

LEAF.

Insertion

Venation

Form

Margin

Upper surface

Lower surface



LEAF.

FLOWER.

Inflorescence

Perfectness

Regularity

Cohesion

No. of sepals

No. of petals

Shape of corolla

Color

Insertion of stamens

No. of stamens

OVARY.

No. of carpels

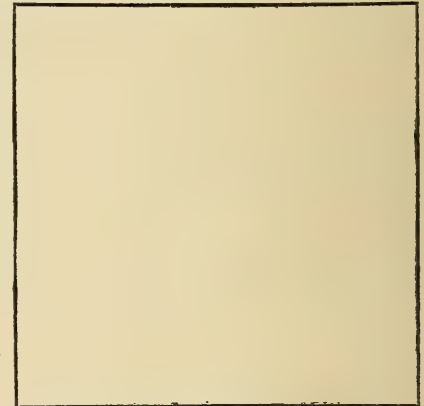
Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.

IDENTIFICATION.

Family or Order

Genus Species

Common Name

Habitat Locality

Remarks

STEM. { No. Date

Class Character

LEAF. { Insertion

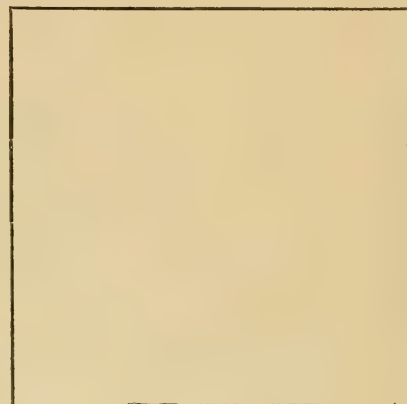
Venation

Form

Margin

Upper surface

Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness

Regularity Cohesion

No. of sepals No. of petals

Shape of corolla Color

Insertion of stamens No. of stamens

OVARY. { No. of carpels

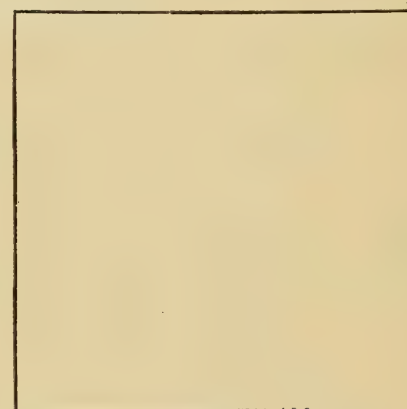
Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.



IDENTIFICATION. { Family or Order


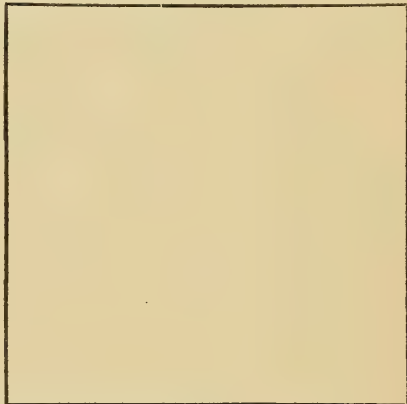
Genus Species



Common Name


Habitat Locality

Remarks

STEM.	No.	Date	
	Class	Character	
LEAF.	Insertion		
	Venation		
	Form		
	Margin		
	Upper surface		
	Lower surface		
		LEAF.	
FLOWER.	Inflorescence	Perfectness	
	Regularity	Cohesion	
	No. of sepals	No. of petals	
	Shape of corolla	Color	
	Insertion of stamens	No. of stamens	
	OVARY.	No. of carpels	
Cohesion			
Shape of ovary			
No. of cells		No. of ovules	
Placentation			
Fruit			
		FLOWER.	
IDENTIFICATION.	Family or Order		
	Genus	Species	
	Common Name		
	Habitat	Locality	
	Remarks		

STEM.	{	No.	Date
		Class	Character
LEAF.	{	Insertion	
		Venation	
		Form	
		Margin	
		Upper surface	
		Lower surface	
		LEAF.	
FLOWER.	{	Inflorescence	Perfectness
		Regularity	Cohesion
		No. of sepals	No. of petals
		Shape of corolla	Color
		Insertion of stamens	No. of stamens
OVARY.	{	No. of carpels	
		Cohesion	
		Shape of ovary	
		No. of cells No. of ovules	
		Placentation	
		Fruit	
		FLOWER.	
IDENTIFICATION.	{	Family or Order	
		Genus	Species
		Common Name	
		Habitat	Locality
		Remarks	

STEM.	No.	Date	
	Class	Character	
LEAF.	Insertion		
	Venation		
	Form		
	Margin		
	Upper surface		
	Lower surface	LEAF	
FLOWER.	Inflorescence	Perfectness	
	Regularity	Cohesion	
	No. of sepals	No. of petals	
	Shape of corolla	Color	
	Insertion of stamens	No. of stamens	
OVARY.	No. of carpels		
	Cohesion		
	Shape of ovary		
	No. of cells		No. of ovules
	Placentation		
	Fruit		
IDENTIFICATION.	Family or Order		
	Genus	Species	
	Common Name		
	Habitat	Locality	
	Remarks		

STEM.	{	No.	Date	
		Class	Character	
LEAF.	{	Insertion		
		Venation		
		Form		
		Margin		
		Upper surface		
		Lower surface		
LEAF.				
FLOWER.	{	Inflorescence	Perfectness	
		Regularity	Cohesion	
		No. of sepals	No. of petals	
		Shape of corolla	Color	
		Insertion of stamens	No. of stamens	
		OVARY.	{	No. of carpels
Cohesion				
Shape of ovary				
No. of cells	No. of ovules			
Placentation				
Fruit				
FLOWER.				
IDENTIFICATION.	{	Family or Order		
		Genus	Species	
		Common Name		
		Habitat	Locality	
		Remarks		

STEM. { No. Date
Class Character

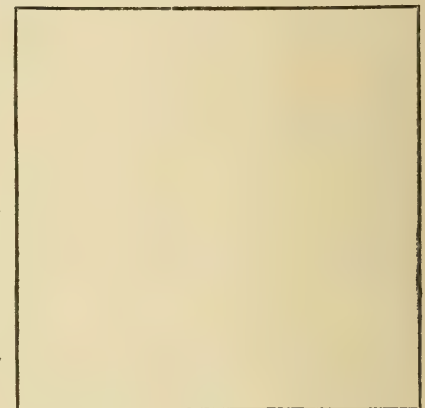
LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF

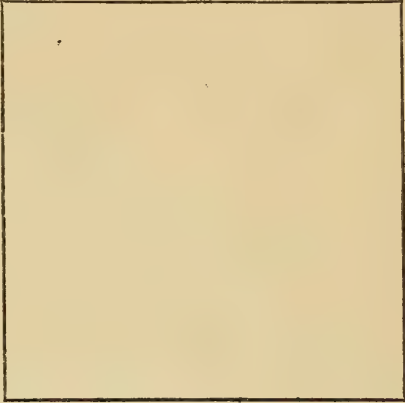
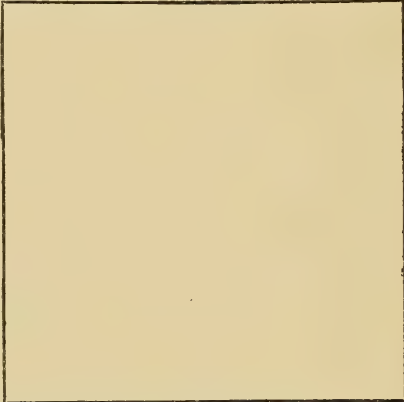
FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit



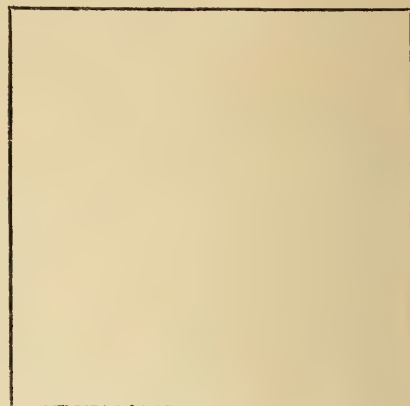
FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM.	No.	Date	
	Class	Character	
LEAF.	Insertion		
	Venation		
	Form		
	Margin		
	Upper surface		
	Lower surface	LEAF.	
FLOWER.	Inflorescence	Perfectness	
	Regularity	Cohesion	
	No. of sepals	No. of petals	
	Shape of corolla	Color	
	Insertion of stamens	No. of stamens	
OVARY.	No. of carpels		
	Cohesion		
	Shape of ovary		
	No. of cells		No. of ovules
	Placentation		
	Fruit		
IDENTIFICATION.	Family or Order		
	Genus	Species	
	Common Name		
	Habitat	Locality	
	Remarks		

STEM. { No. Date
Class Character

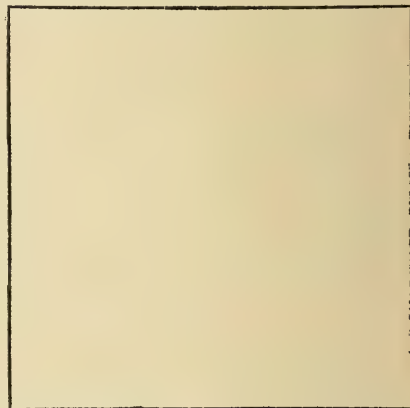
LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit



FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM. { No. Date

Class Character

LEAF. { Insertion

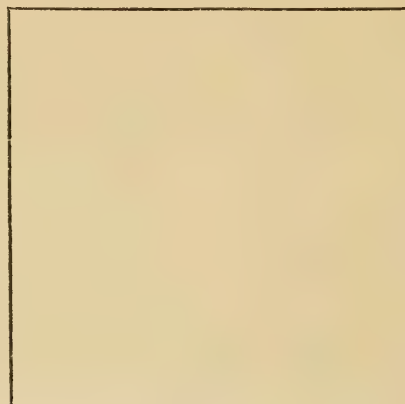
Venation

Form

Margin

Upper surface

Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness

Regularity Cohesion

No. of sepals No. of petals

Shape of corolla Color

Insertion of stamens No. of stamens

OVARY. { No. of carpels

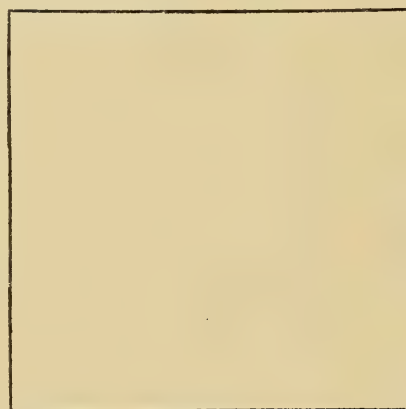
Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.

IDENTIFICATION. { Family or Order

Genus Species

Common Name

Habitat Locality

Remarks

STEM. { No. Date
Class Character

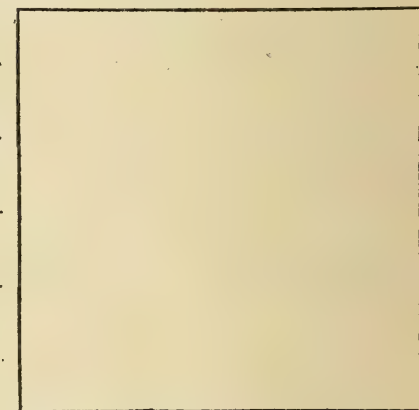
LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF.



FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit



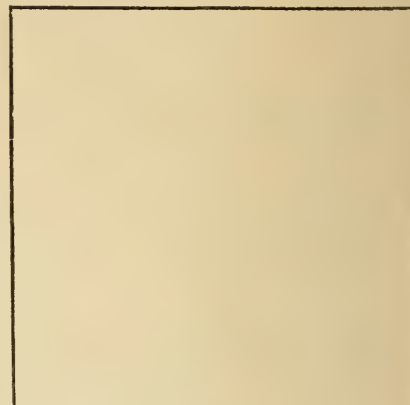
FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM.	No.	Date	
	Class	Character	
LEAF.	Insertion		
	Venation		
	Form		
	Margin		
	Upper surface		
	Lower surface		
LEAF.			
FLOWER.	Inflorescence	Perfectness	
	Regularity	Cohesion	
	No. of sepals	No. of petals	
	Shape of corolla	Color	
	Insertion of stamens	No. of stamens	
OVARY.	No. of carpels		
	Cohesion		
	Shape of ovary		
	No. of cells		No. of ovules
	Placentation		
	Fruit		
FLOWER.			
IDENTIFICATION.	Family or Order		
	Genus	Species	
	Common Name		
	Habitat	Locality	
	Remarks		

STEM. { No. Date
Class Character

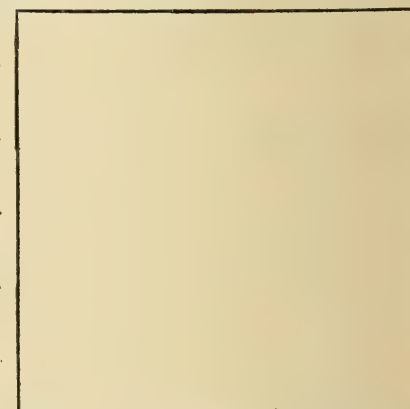
LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF.



FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit



FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM.	No.	Date
	Class	Character
LEAF.	Insertion	
	Venation	
	Form	
	Margin	
	Upper surface	
	Lower surface	
LEAF.		
FLOWER.	Inflorescence	Perfectness
	Regularity	Cohesion
	No. of sepals	No. of petals
	Shape of corolla	Color
	Insertion of stamens	No. of stamens
OVARY.	No. of carpels	
	Cohesion	
	Shape of ovary	
	No. of cells No. of ovules	
	Placentation	
	Fruit	
FLOWER.		
IDENTIFICATION.	Family or Order	
	Genus	Species
	Common Name	
	Habitat	Locality
	Remarks	

STEM. { No. Date
Class Character

LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit



FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM. { No. Date

Class Character

LEAF. { Insertion

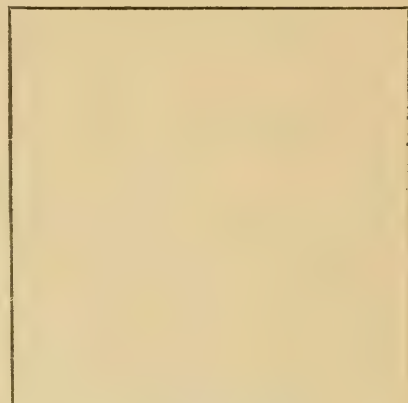
Venation

Form

Margin

Upper surface

Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness

Regularity Cohesion

No. of sepals No. of petals

Shape of corolla Color

Insertion of stamens No. of stamens

OVARY. { No. of carpels

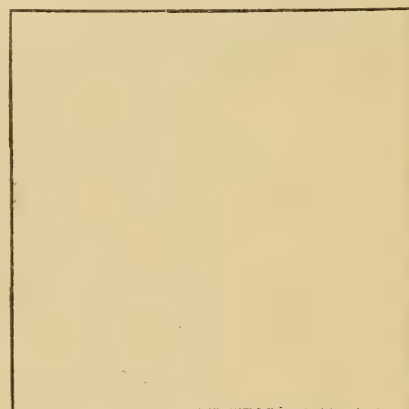
Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.

IDENTIFICATION. { Family or Order

Genus Species

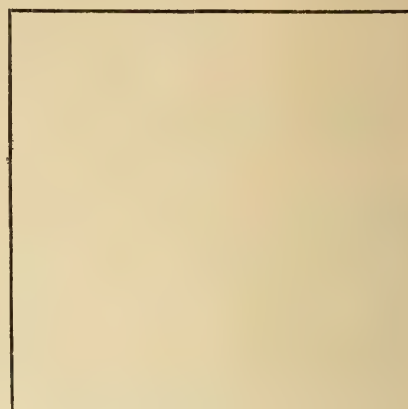
Common Name

Habitat Locality

Remarks

STEM. { No. Date.....
Class..... Character

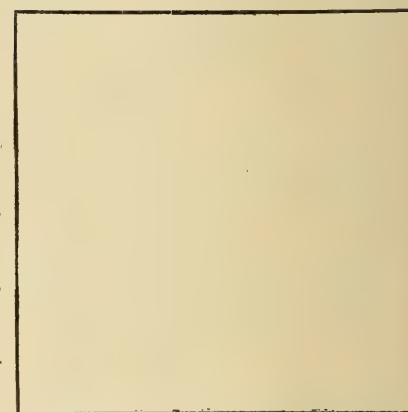
LEAF. { Insertion
Venation
Form.....
Margin
Upper surface
Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness.....
Regularity..... Cohesion
No. of sepals..... No. of petals.....
Shape of corolla Color.....
Insertion of stamens..... No. of stamens.....

OVARY. { No. of carpels
Cohesion
Shape of ovary.....
No. of cells..... No. of ovules.....
Placentation.....
Fruit.....



FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat..... Locality.....
Remarks

STEM. { No. Date

Class Character

LEAF. { Insertion

Venation

Form

Margin

Upper surface

Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness

Regularity Cohesion

No. of sepals No. of petals

Shape of corolla Color

Insertion of stamens No. of stamens

OVARY. { No. of carpels

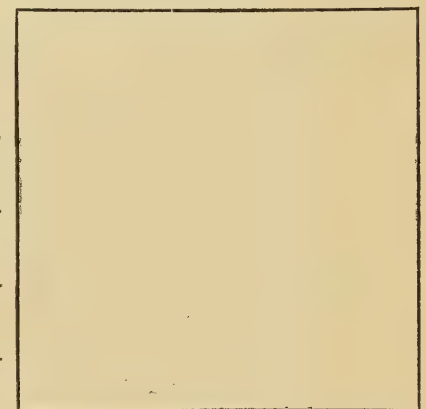
Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.

IDENTIFICATION. { Family or Order

Genus Species

Common Name

Habitat Locality

Remarks

STEM. { No. Date

Class Character

LEAF. { Insertion

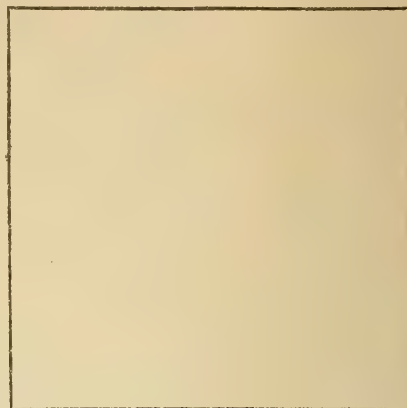
Venation

Form

Margin

Upper surface

Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness

Regularity Cohesion

No. of sepals No. of petals

Shape of corolla Color

Insertion of stamens No. of stamens

OVARY. { No. of carpels

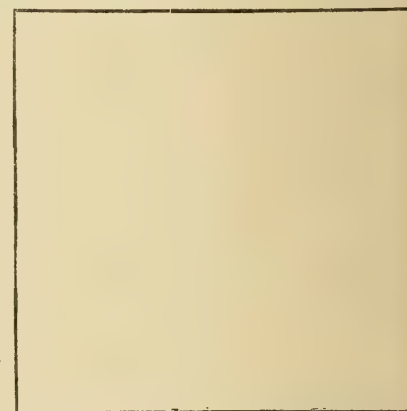
Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.

IDENTIFICATION. { Family or Order

Genus Species

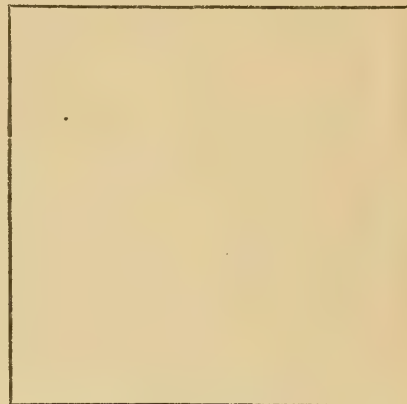
Common Name

Habitat Locality

Remarks

STEM. { No. Date
Class Character

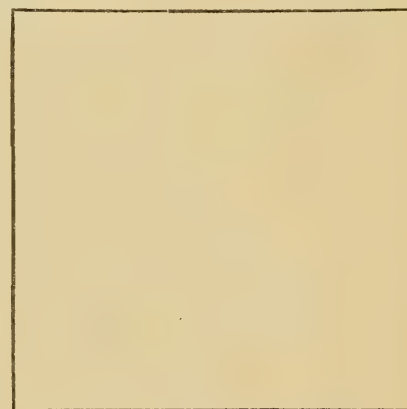
LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF.

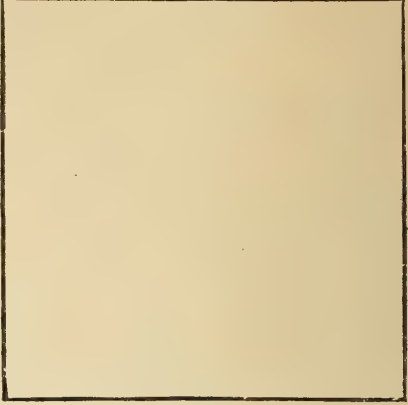
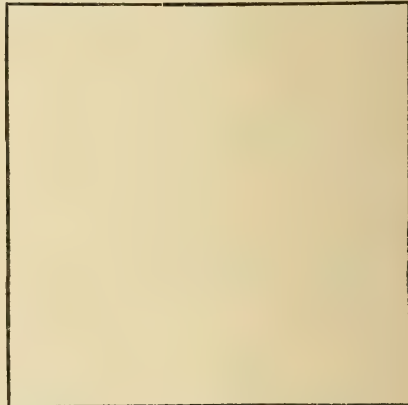
FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit



FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM.	No.	Date
	Class	Character
LEAF.	Insertion	
	Venation	
	Form	
	Margin	
	Upper surface	
	Lower surface	
		LEAF
FLOWER.	Inflorescence	Perfectness
	Regularity	Cohesion
	No. of sepals	No. of petals
	Shape of corolla	Color
	Insertion of stamens	No. of stamens
	No. of carpels	
Cohesion		
Shape of ovary		
No. of cells	No. of ovules	
Placentation		
Fruit		
		FLOWER.
IDENTIFICATION.	Family or Order	
	Genus	Species
	Common Name	
	Habitat	Locality
	Remarks	

STEM. { No. Date

Class Character

LEAF. { Insertion

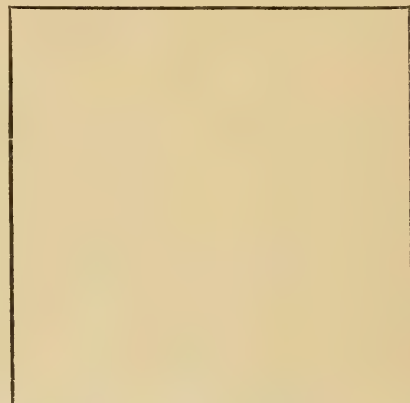
Venation

Form

Margin

Upper surface

Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness

Regularity Cohesion

No. of sepals No. of petals

Shape of corolla Color

Insertion of stamens No. of stamens

OVARY. { No. of carpels

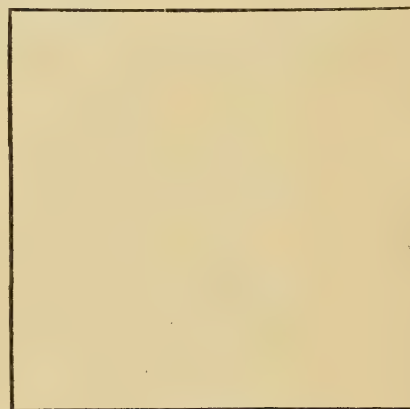
Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.

IDENTIFICATION. { Family or Order

Genus Species

Common Name

Habitat Locality

Remarks

STEM. { No. Date
Class Character

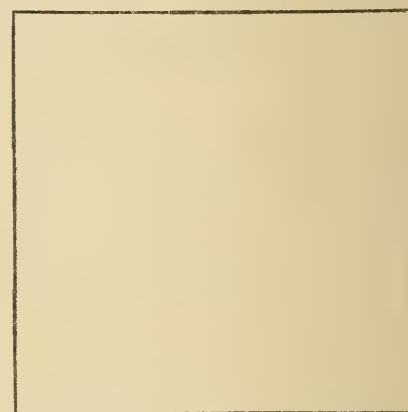
LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF

FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit

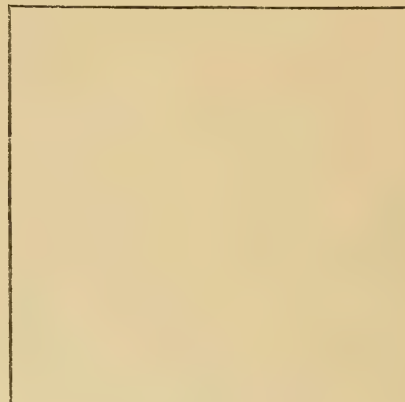


FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM. { No. Date
Class Character

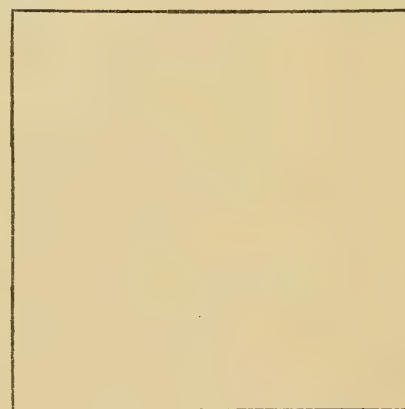
LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit

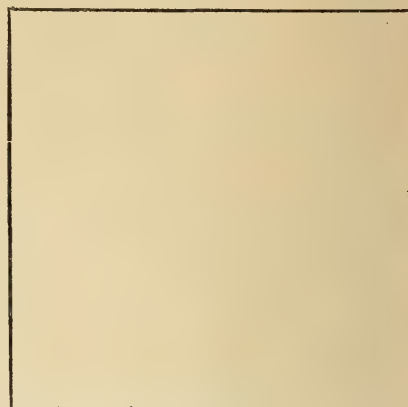


FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM. { No. Date
Class Character

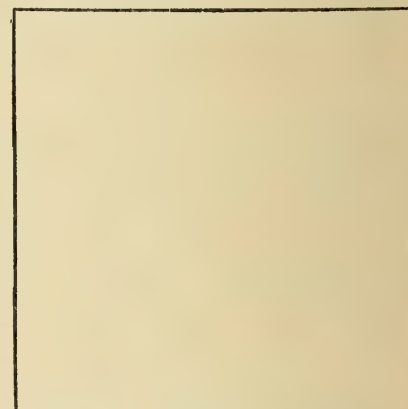
LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit

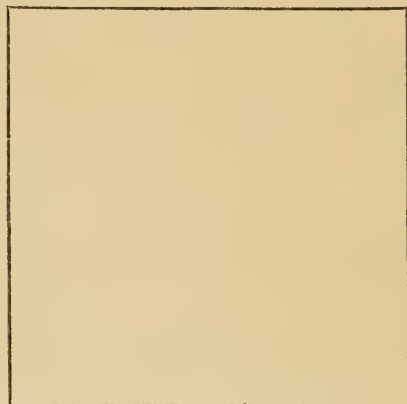


FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM. { No. Date
Class Character

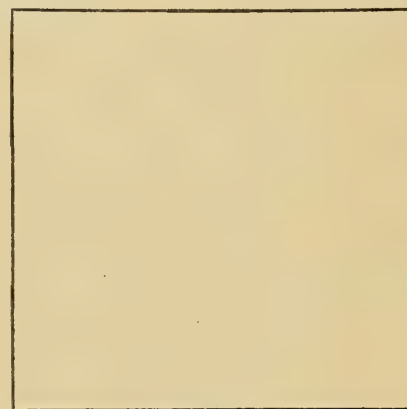
LEAF. { Insertion
Venation
Form
Margin
Upper surface
Lower surface



LEAF.

FLOWER. { Inflorescence Perfectness
Regularity Cohesion
No. of sepals No. of petals
Shape of corolla Color
Insertion of stamens No. of stamens

OVARY. { No. of carpels
Cohesion
Shape of ovary
No. of cells No. of ovules
Placentation
Fruit

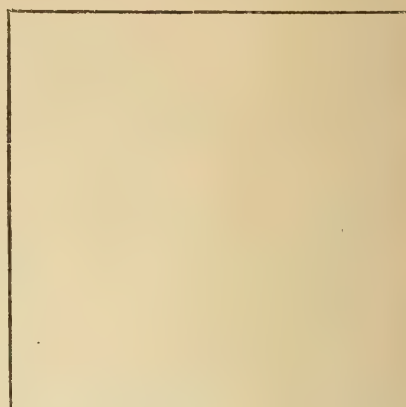


FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality
Remarks

STEM. { No. Date
 Class Character

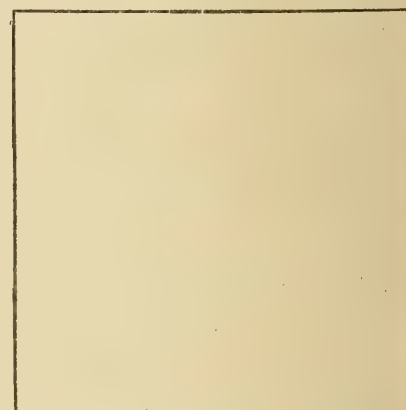
LEAF. { Insertion
 Venation
 Form
 Margin
 Upper surface
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LEAF.

FLOWER. { Inflorescence Perfectness
 Regularity Cohesion
 No. of sepals No. of petals
 Shape of corolla Color
 Insertion of stamens No. of stamens

OVARY. { No. of carpels
 Cohesion
 Shape of ovary
 No. of cells No. of ovules
 Placentation
 Fruit



FLOWER.

IDENTIFICATION. { Family or Order
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STEM. { No. Date.....
Class..... Character.....

LEAF. { Insertion
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Upper surface
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LEAF.

FLOWER. { Inflorescence Perfectness.....
Regularity..... Cohesion
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Shape of corolla Color.....
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OVARY. { No. of carpels
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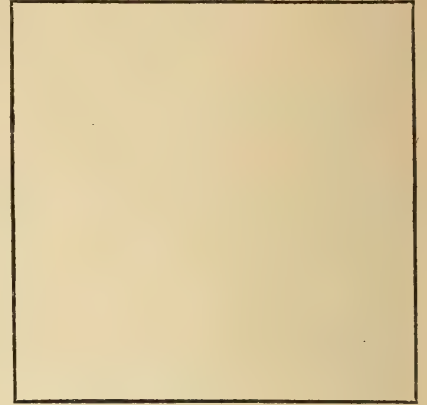


FLOWER.

IDENTIFICATION. { Family or Order
Genus Species
Common Name
Habitat Locality.....
Remarks

STEM. { No. Date
Class Character

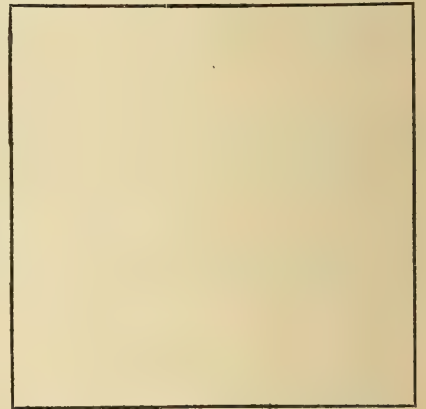
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FLOWER.

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Genus Species
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STEM. { No. Date

Class Character

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Upper surface

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LEAF.

FLOWER. { Inflorescence Perfectness

Regularity Cohesion

No. of sepals No. of petals

Shape of corolla Color

Insertion of stamens No. of stamens

OVARY. { No. of carpels

Cohesion

Shape of ovary

No. of cells No. of ovules

Placentation

Fruit



FLOWER.


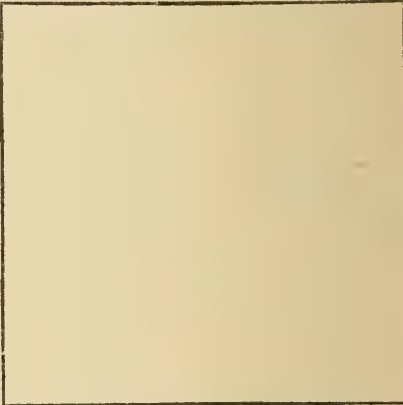
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Genus Species

Common Name

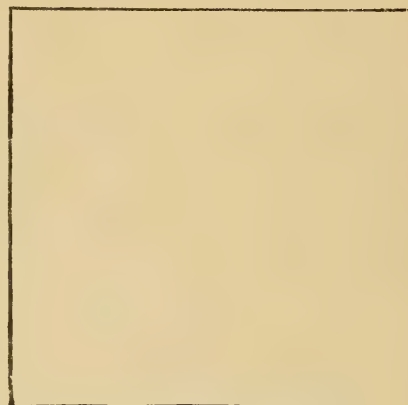
Habitat Locality

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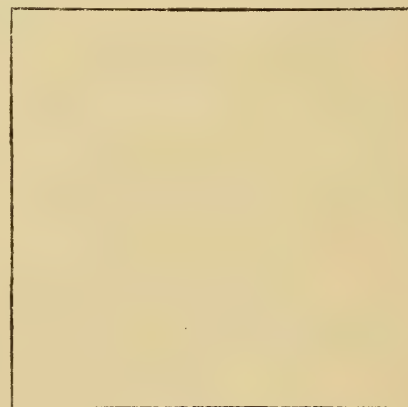
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Shape of ovary
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FLOWER.

IDENTIFICATION. { Family or Order
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Remarks

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Shape of ovary

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Placentation

Fruit



FLOWER.

IDENTIFICATION. { Family or Order

Genus Species

Common Name

Habitat Locality

Remarks

DRAWINGS.

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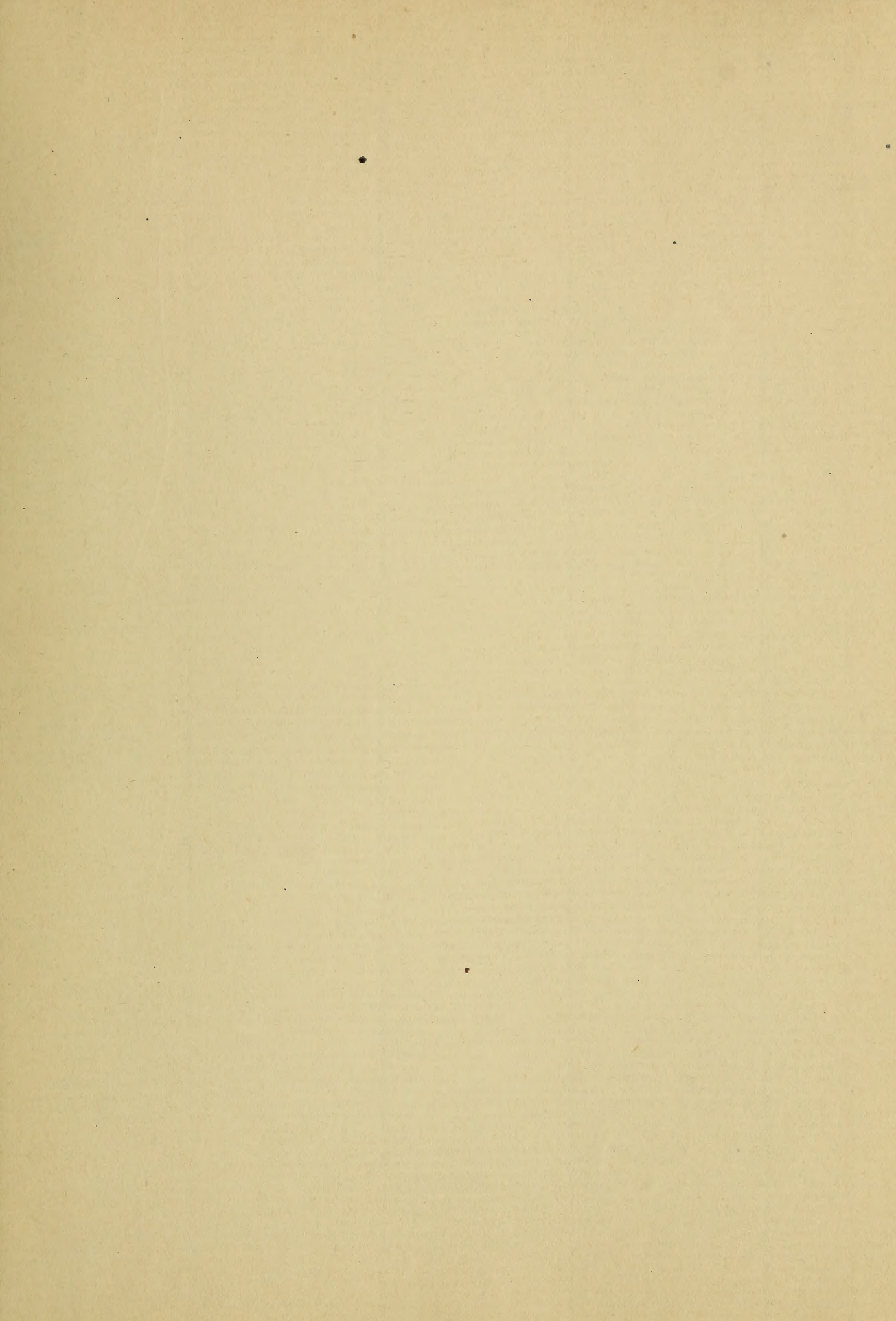
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